

WE CLAIM:

- 1 1. A fuel injection valve for injecting fuel into
2 the combustion chamber of an internal combustion engine,
3 said fuel injection valve comprising:
4 a valve body having a tip, said tip containing
5 injection orifices and a valve needle, said valve needle
6 disposed in an axially displaceable manner in the valve
7 body for opening and closing the injection valve, and a
8 cone located at the tip of the valve needle for
9 selectively blocking a fuel path to the injection
10 orifices, wherein each injection orifice has a respective
11 groove-shaped recess in the tip of the valve needle.
- 1 2. A fuel injection valve according to Claim 1,
2 wherein each recess has a width which corresponds at
3 least to a diameter of an injection orifice.
- 1 3. A fuel injection valve according to Claim 1,
2 wherein each recess has a stepped contour.
- 1 4. A fuel injection valve according to Claim 3,
2 wherein each recess has a curvilinear cross-section.
- 1 5. A fuel injection valve according to Claim 1,
2 wherein the nozzle needle has a guide for reducing
3 rotational movements.
- 1 6. A fuel injection valve according to Claim 5,
2 wherein the guide is a slot-and-key guide.

1 7. A fuel injection valve according to Claim 5,
2 wherein a featherkey engages in a needle guide of the
3 valve needle in a guide groove in a hollow cylindrical
4 guide surface in the valve body.

1 8. A fuel injection valve according to Claim 5,
2 wherein the guide is a longitudinal guide.

1 9. A fuel injection valve according to Claim 1,
2 wherein each recess has an arched contour.

1 10. A fuel injection valve according to Claim 9,
2 wherein each recess has a semicircular cross-section.

1 11. A fuel injection valve according to Claim 1,
2 wherein the recesses of the injection orifices are
3 adapted to compensate for asymmetrical flow conditions.

1 12. A fuel injection valve according to Claim 1,
2 wherein the recesses are of triangular cross-section.

1 13. A fuel injection valve according to Claim 1,
2 wherein a bottom edge of each recess lies at
3 approximately the same height as a bottom edge of each
4 orifice.